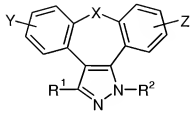
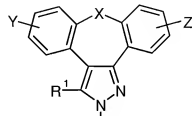
CLAIMS

1. A method of treating a disease, damage or disorder of the central nervous system associated with a disorder of neurochemical equilibrium of a biogenic amine or other neurotransmitter, comprising administering to a subject in need thereof a compound of formula IA or formula IB



IA



IB

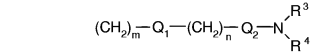
I

wherein

X is selected from the group consisting of CH_2, O, S, S(=O), $S(=O)_2$ and NR^a, wherein R^a is selected from the group consisting of hydrogen, C_1-C_3-alkyl, C_1-C_3-alkanoyl, C_1-C_7-alkoxycarbonyl, C_7-C_{10}-arylalkyloxycarbonyl, C_7-C_{10}-aroyl, C_7-C_{10}-arylalkyl, C_3-C_7–alkylsilyl and C_5-C_{10}-alkylsilylalkyloxyalkyl;

Y and Z are each independently selected from the group consisting of hydrogen, halogen, C_1-C_4- alkyl, C_2-C_4-alkenyl, C_2-C_4- alkynyl, halo-C_1-C_4-alkyl, hydroxy, C_1-C_4-alkoxy, trifluoromethoxy, C_1-C_4-alkanoyl, amino, amino-C_1-C_4-alkyl, *N*-(C_1-C_4-alkyl)amino, *N,N*-di(C_1-C_4-alkyl)amino, thiol, C_1-C_4-alkylthio, sulfonyl, C_1-C_4-alkylsulfonyl, sulfinyl, C_1-C_4-alkylsulfinyl, carboxy, C_1-C_4-alkoxycarbonyl, cyano and nitro;

R^1 is selected from the group consisting of hydrogen, CHO, CH_2OH, and a substituent of the formula **II:**



II

wherein

R^3 and R^4 simultaneously or are each independently from each other have the meaning ofhydrogen, C_1-C_4-alkyl or aryl; or

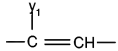
R^3 and R^4 taken together with the nitrogen atom to which they are attached form a heterocycle or heteroaryl group that is optionally substituted with one or two substituents selected from the group consisting of halogen, C_1-C_4 alkyl, cyano, nitro, hydroxy, C_1-C_4 alkoxy, thiol, C_1-C_4 alkylthio, amino, *N*-(C_1-C_4) alkylamino, *N,N*-di(C_1-C_4-alkyl)-amino, sulfonyl, C_1-C_4 alkylsulfonyl, sulfinyl, and C_1-C_4 alkylsulfinyl;

m is an integer from 1 to 3

n is an integer from 0 to 3;

Q_1 and Q_2 are each independently selected from the group consisting of oxygen, sulfur,




and

wherein

y_1 and y_2 are each independently selected from the group consisting of hydrogen, halogen, C_1-C_4-alkyl optionally substituted with one or more substituents selected from the group consisting of halogen, hydroxy, C_1-C_4 alkoxy, thiol, C_1-C_4 alkylthio, amino, N-(C_1-C_4) alkylamino, N,N-di(C_1-C_4-alkyl)-amino, sulfonyl, C_1-C_4 alkylsulfonyl, sulfinyl and C_1-C_4 alkylsulfinyl; hydroxy; C_1-C_4-alkoxy; C_1-C_4-alkanoyl; thiol; C_1-C_4-alkylthio; sulfonyl; C_1-C_4-alkylsulfonyl; sulfinyl; C_1-C_4-alkylsulfinyl; cyano; nitro, and an aryl group optionally substituted with one or more substituents selected from the group consisting of halogen, hydroxy, C_1-C_4 alkoxy, thiol, C_1-C_4 alkylthio, amino, N-(C_1-C_4) alkylamino, N,N-di(C_1-C_4-alkyl)-amino, sulfonyl, C_1-C_4 alkylsulfonyl, sulfinyl and C_1-C_4 alkylsulfinyl, or

y_1 and y_2 taken together with the carbon atom to which they are attached form a carbonyl group or an imino group;

R^2 is hydrogen, $CH_2OCH_2CH_2Si(CH_3)_3$, $CH_2CH_2C_6H_5$, CH_2CH_2OH or a substituent of the formula II;

and a pharmaceutically acceptable salt or solvate thereof, with the proviso that when R^1 is hydrogen, R^2 is not hydrogen.

2. The method of claim 1, wherein the biogenic amine is serotonin, norepinephrine or dopamine.

3. The method of claim 1, wherein the neurotransmitter is glutamate.

4. The method of claim 1 wherein the compound of formula IA or formula IB regulates the synthesis, storage, release, metabolism, reabsorption or receptor binding of a biogenic amine or neurotransmitter.

5. The method of claim 4, wherein the compound of formula IA or formula IB binds to a receptor of a biogenic amine.

6. The method of claim 5, wherein the compound of formula IA or formula IB binds to a serotonin 5-HT_{2A} or 5-HT_{2C} receptor.

7. The method of claim 6, wherein the compound of formula IA or formula IB binds to a serotonin 5-HT_{2A} or 5-HT_{2C} receptor with an IC_{50} of less than 1μM.

8. The method of claim 1, wherein the compound of formula IA or formula IB binds to a σ1 receptor with an IC_{50} of less than 1 μM.

9. The method of claim 1, wherein the compound of formula IA or formula IB binds to a σ1 receptor and to at least one serotonin receptor selected from 5-HT_{2A} and 5-HT_{2C}.

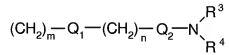
10. The method of claim 1, wherein the disease or disorder of the central nervous system is selected from the group consisting of anxiety, depression, bipolar disorders, sleeping disorders, sexual disorders, psychosis, borderline psychosis, schizophrenia, migraine, personality disorders, obsessive-compulsive disorders, social phobia, panic attacks, organic mental disorders in children, aggression, memory disorders, personality disorders in elderly people, addiction, obesity, bulimia and other eating disorders, snoring, and premenstrual troubles.

11. The method of claim 1, wherein the damage to the central nervous system is caused by trauma, brain stroke, neurodegenerative diseases, cardiovascular disorders, thrombosis, infarct or gastrointestinal disorders.

12. The method of claim 1 wherein X is O, S, or NR^a wherein R^a is hydrogen or a substituent selected from the group consisting of C_1-C_3-alkyl, C_1-C_3-alkanoyl, C_7-C_{10}-aroyl and C_7-C_{10}-arylalkyl.

13. The method of claim 1, wherein Y and Z are each independently selected from the group consisting of hydrogen, fluorine, chlorine, bromine, C_1-C_4-alkyl, halo-C_1-C_4-alkyl, hydroxy, C_1-C_4-alkoxy, trifluoromethoxy, C_1-C_4-alkanoyl, amino, amino-C_1-C_4-alkyl, C_1-C_4-alkylamino, *N*-(C_1-C_4-alkyl)amino, *N*,*N*-di(C_1-C_4-alkyl)amino, thiol, C_1-C_4-alkylthio, cyano and nitro.

14. The method of claim 1, wherein R^1 is hydrogen, CHO, CH_2OH, or a substituent of the formula **II:**



II

wherein

R^3 and R^4 are each independently hydrogen, C_1-C_4-alkyl, or aryl; or

R^3 and R^4 taken together with the nitrogen atom to which they are attached form a heterocycle or heteroaryl group selected from the group consisting of morpholine-4-yl, piperidine-1-yl, pyrrolidine-1-yl, imidazole-1-yl and piperazine-1-yl;

m is an integer from 1 to 3;

n is an integer from 0 to 3; and

Q_1 and Q_2 are each independently oxygen or CH_2;

with the proviso that when R^1 is hydrogen, R^2 is not hydrogen.

15. The method of claim 1, wherein the compound of formula IA or formula IB is, selected from the group consisting of:

2-(8-oxa-1,2-diaza-dibenzo[e,h]azulene-1-yl)-ethanol;

2-(8-oxa-1,2-diaza-dibenzo[e,h]azulene-2-yl)-ethanol;

2-(8-thia-1,2-diaza-dibenzo[e,h]azulene-1-yl)-ethanol;

2-(8-thia-1,2-diaza-dibenzo[e,h]azulene-2-yl)-ethanol;

(2-phenethyl-2H-8-oxa-1,2-diaza-dibenzo[e,h]azulene-3-yl)-methanol;

(2-phenethyl-2H-8-thia-1,2-diaza-dibenzo[e,h]azulene-3-yl)-methanol;

[2-(2-trimethylsilyl-ethoxymethyl)-2H-8-oxa-1,2-diaza-dibenzo[e,h]azulene-3-yl]-methanol;

[2-(2-trimethylsilyl-ethoxymethyl)-2H-8-thia-1,2-diaza-dibenzo[e,h]azulene-3-yl]-methanol;

[11-chloro-2-(2-trimethylsilyl-ethoxymethyl)-2H-8-oxa-1,2-diaza-dibenzo[e,h]azulene-3-yl]-methanol;

dimethyl-{2-[2-(8-thia-1,2-diaza-dibenzo[e,h]azulen-1-yl)-ethoxy]-ethyl}-amine;

dimethyl-{3-[2-(8-thia-1,2-diaza-dibenzo[e,h]azulen-1-yl)-ethoxy]-propyl}-amine;

dimethyl-{2-[2-(8-thia-1,2-diaza-dibenzo[e,h]azulen-2-yl)-ethoxy]-ethyl}-amine;

dimethyl-{3-[2-(8-thia-1,2-diaza-dibenzo[e,h]azulen-2-yl)-ethoxy]-propyl}-amine;

dimethyl-[2-(2-phenethyl-2H-8-oxa-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy)-ethyl]-amine;

dimethyl-[3-(2-phenethyl-2H-8-oxa-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy)-propyl]-amine;

dimethyl-[2-(2-phenethyl-2H-8-thia-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy)-ethyl]-amine;

dimethyl-[3-(2-phenethyl-2H-8-thia-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy)-propyl]-amine;

dimethyl-{2-[2-(2-trimethylsilyl-ethoxymethyl)-2H-8-oxa-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy]-ethyl}-amine;

dimethyl-[2-(1H-8-oxa-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy)-ethyl]-amine;

dimethyl-[2-(2H-8-oxa-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy)-ethyl]-amine;

dimethyl-{3-[2-(2-trimethylsilyl-ethoxymethyl)-2H-8-oxa-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy]-propyl}-amine;

dimethyl-[3-(1H-8-oxa-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy)-propyl]-amine;

dimethyl-[3-(2H-8-oxa-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy)-propyl]-amine;

dimethyl-{2-[2-(2-trimethylsilyl-ethoxymethyl)-2H-8-thia-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy]-ethyl}-amine;

dimethyl-[2-(1H-8-thia-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy)-ethyl]-amine;

dimethyl-[2-(2H-8-thia-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy)-ethyl]-amine;

dimethyl-{3-[2-(2-trimethylsilyl-ethoxymethyl)-2H-8-thia-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy]-propyl}-amine;

dimethyl-[3-(1H-8-thia-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy)-propyl]-amine;

dimethyl-[3-(2H-8-thia-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy)-propyl]-amine;

{2-[11-chloro-2-(2-trimethylsilyl-ethoxymethyl)-2H-8-oxa-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy]-ethyl}-dimethyl-amine;

[2-(11-chloro-1H-8-oxa-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy)-ethyl]-dimethyl-amine;

[2-(11-chloro-2H-8-oxa-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy)-ethyl]-dimethyl-amine;

{3-[11-chloro-2-(2-trimethylsilyl-ethoxymethyl)-2H-8-oxa-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy]-propyl}-dimethyl-amine,

[3-(11-chloro-1H-8-oxa-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy)-propyl]-dimethyl-amine;

[3-(11-chloro-2H-8-oxa-1,2-diaza-dibenzo[e,h]azulen-3-ylmethoxy)-propyl]-dimethyl-amine; and

a pharmaceutically acceptable salt or solvate thereof.